47. The method according to claim 33 wherein the layer has a thickness of greater than 8mm.

REMARKS

The Examiner's reconsideration of the application is requested in view of the various amendments above, attachment hereto, and comments which follow.

Taking the matters raised by the Examiner in turn, the election of Group I was without traverse, and the Examiner is correct.

Regarding the Information Disclosure Statement, following is the concise explanation of the relevants of the references, forming part of the IDS filed April 11, 2001:

CH648358

Title: Method of manufacturing a hot gas corrosion resistant protective layer on metal parts

Coating layer of oxide in the examples is maximum 2.5 mm including adhesion layer and is applied by flame spraying. Micro-cracks are deliberately introduced into the coating by cooling the coating during deposition using, for example, carbon dioxide.

Claim 1 refers to applying metal and oxide layers up to a maximum of 8mm.

This reference is mentioned in the IPER which confirms that the coating contains no noble metal. The coating is said to be a protective coating for machine parts and not for forming a sputtering target.

DE4015387

Title: Low pressure plasma spraying process for the purpose of manufacture and repair of sputter targets

Deposition is done under vacuum (vacuum pump 9). Powder is ejected through the gun 4. No details of thickness of the coating. Inclusion of noble metals in the coating to improve thermal conductivity is not mentioned.

EP355736

Title: Process for the manufacture of an inorganic thin film on a support using a target

Two different powders are specially prepared and then thermally sprayed onto a metal substrate to form a coating. Coating thickness is 0.1 to 3mm (col. 2, line 30, col. 4,

line 6)). The thermal spraying can be flame or plasma spraying. Inclusion of noble metals in the coating to improve thermal conductivity is not mentioned.

DE3318828

Title: Method of bonding target material to cathode base for use in coating processes using cathode sputtering

Describes the use of an adhesion layer, e.g. nickel based before applying the oxide coating. Coating thickness of 4mm is mentioned.

DD277471

Title: Composite target

Describes repairing a target by filling up the erosion grooves using thermal spraying. Spying of Titanium and Chromium is mentioned in the examples.

WO89/08333

Title: Process for depositing layers of a high-temperature superconducting material on substrates

Describes a method of spraying individual components of a complex superconducting oxide together to form the superconducting material on a substrate. No additional materials to be sprayed are described.

In the section beginning at the bottom of page 2 and continuing through page 3 of the Office Action, the Examiner has rejected Claims 21, 33, 35 and 36 under 35 U.S.C. § 112 as being indefinite. Reconsideration is requested.

Regarding Claims 21 and 35, contrary to what the Examiner states the specification clearly recites up to 30% silver is included in the coating. See page 3, lines 22 and 23. The reference to 20-30 % silver nitrate solution states the following:

"One aspect of the present invention is the inclusion of silver metal in the final superconducting ceramic coating. This is achieved as mentioned above by inclusion of about 20% to 30% by weight of the ceramic materials of silver nitrate when nitrate solutions are spray dried and the flame sprayed or by addition of Ag_2O powder in an oxide slurry which is then spray dried and flame sprayed." (page 18, lines 26-30)

This statement occurs in the section of the specification that describes the illustrative embodiments. Thus, the silver nitrate amounts are an embodiment of the present invention but are not necessarily limiting on the invention. Page 7, lines 23 to 30 points out that what follows in the specification refers to embodiments which are not necessarily limiting details.

In addition, it states on page 3, lines 15 to 17:

"Preferably, about 20% or up to 30% of a noble metal is included in the oxide material to improve electrical and thermal properties of the deposited layer."

Thus, the preferred embodiment is "about 20%". 30% silver nitrate results in 108/170 times 30% silver into the coating, that is 19% or "about 20%". Thus the reference to 20-30% silver nitrate relates to a disclosure of how to achieve the preferred embodiment – it is not a definition of the upper limit of the invention.

Thus, it is submitted that Claims 21 and 35 are adequately supported by the specification, and the requirements of 35 U.S.C. § 112 have been met.

Regarding Claim 33, the offending clause has been deleted, and new claim 47 has been added.

Regarding Claim 36, it is believed that Claim 36, as filed, is grammatically correct, and the proposal of the Examiner does not appear to be grammatically correct. However, to reduce issues, claim 36 has been amended as proposed by the Examiner.

Claims 43 to 46 have added. They define that the silver range can be between 20 and 30% or between 12.7 and 30%. The value of 12.7% can be derived from 20% by weight of silver nitrate. The amount of silver in this mixture is determined from the molecular weights, i.e. 108/170 times 20% which provides the value 12.7%.

Claim rejections – 35 USC §103

First of all it is noted that none of the claims are anticipated by Chen. However, the Examiner has rejected the claims under 35 U.S.C. § 103 , with Chen U.S. Patent Number 5,196,400 being the primary reference, and the Cukauskas article being the secondary reference. Reconsideration is requested.

Claims 18 and 33

Cukauskas relates to the deposition of micron coatings onto a single crystal MgO substrate – top of left hand column, page 6947. On the other hand claims 18 and 33 are limited to **at least 5mm**. Thus, the present application relates to coatings which are at 500 times thicker than those disclosed in Cukausas. The thermal conditions and mechanical stresses of depositing a layer of the order of millime on to a substrate are massive compared with those experienced in the deposition technique of Cukausas. Also, the coatings of the present invention are for deposition onto metal cores for use as a target in a sputtering magnetron. This is very different than depositing on to a crystalline perfect coating of semiconductor precision such as single crystal Mg0. Cukauskas relates to very fine coatings in a highly specialised semiconductor environment and is non-analogous art with respect to the deposition of macro-size coatings in accordance with the present invention.

In addition, the process requires ramping up, **during the deposition**, over a temperature range of 350 to 850°c – see right hand column, page 6946, lines 9-11 of section II. This means the ramp is carried out during the deposition of a coating of a maximum of 10 micron – see top of left hand column on page 6947. This ramp is necessary for nucleation at the lower temperature – see right hand column, page 6946, lines 11- 13 of section II. There is no disclosure in Cukauskas what to do with the remaining 4.99 mm of the coating, i.e. there is no disclosure of how to deal with the remaining 99.8% of the coating. Cukauskas only provides a disclosure of how to perform a minute proportion of the present invention – the

heat input in Cukauskas is minute compared to that of the coating methods of the present invention. This additional heat input may have serious effects on the coating, on the distribution of the silver and the oxides and on the stability of the coating.

The effect on the thermal conductivity of the coating is not measured in Cukauskas and the amount of silver in the coating could not be measured – see right hand column last paragraph. Thus, no clear, unambiguous teaching on silver content of the deposited film is disclosed nor what the effect on the thermal conductivity would be.

On the other hand Chen et al. states in the summary of the invention that Chen provides everything necessary to obtain a good electrical and thermal conductivity. This is achieved by providing a good adhesion to the underlying target core. Thus, the skilled person would not be motivated to investigate other methods of achieving a good electricval orthermal conductivity and would not refer to a reference such as Cukauskas which is non-analogous art.

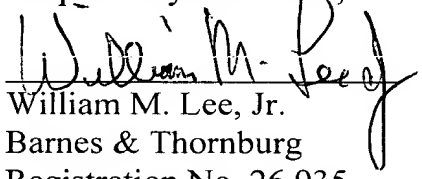
Hence, there is no motivation for the skilled person to consider Cukauskas nor to combine the teaching with Chen, and it is submitted that the claims distinguish from, and are allowable over, the prior art.

This response is being submitted during the fourth month following the Examiner's Office Action. Accordingly, an appropriate petition for extension of time is also submitted herewith.

Given the above, it is submitted that this application is now in condition for allowance, and the examiner's further and favourable reconsideration in that regard is urged.

January 27, 2003

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

33. (Amended) A method of depositing by flame or plasma spraying at atmospheric pressure a layer onto a substrate, the layer having a thickness of at least 5 mm, [more preferably greater than 8 mm,] the coating comprising metal oxides, the method including the step of depositing an additional noble metal with the coating to increase thermal conductivity of the coating.

36. (Amended) The method according to claim 33, wherein the spraying step includes spraying a material through a spraying head, the material being in the form of one of a powder, a slurry [and] or a solution.